4

Theories of Teaching

Principles of Teaching from Theories of Learning

Theories of learning are of use only to laboratory scientists unless they are applied somehow to the facilitation of learning, a function assigned usually in our society to a person designated as teacher.

> A distinction can be made between theories of learning and theories of teaching. While theories of learning deal with the ways in which an organism learns, theories of teaching deal with the ways in which a person influences an organism to learn. [Gage, 1972, p. 56]

Presumably, the learning theory subscribed to by a teacher will influence his theory of teaching.

> Teaching becomes the process of providing for the learner what a given learning theory regards as essential. For the conditioning theorists, the teacher must provide cues for a given response and reinforcement of that response. For the modeling theorist, the teacher must provide a model to be observed and imitated. For the cognitive theorist, the teacher must provide a cognitive structure or the stimuli that will produce one. [Gage, 1972, p. 19]

Gage apparently didn't recognize humanistic theorists.

Hilgard, resisting this fragmentation of learning theory, has identified twenty principles from three different families of theories—S-

R theory, cognitive theory, and motivation and personality theory—which are potentially useful:

A. *Principles emphasized in S-R theory*
1. The learner should be *active*, rather than a passive listener or viewer.
2. *Frequency of repetition* is still important in acquiring skill, and for retention through overlearning.
3. *Reinforcement* is important; that is, in repetition desirable or correct responses should be rewarded.
4. *Generalization* and *discrimination* suggest the importance of practice in varied contexts, so that learning will become (or remain) appropriate to a wider (or more restricted) range of stimuli.
5. *Novelty* in behavior can be enhanced through imitation of models, through cueing, through shaping, and is not inconsistent with a liberalized S-R approach.
6. *Drive* is important in learning, but all personal-social motives do not conform to the drive-reduction principles based on food-deprivation experiments.
7. *Conflicts* and *frustrations* arise inevitably in the process of learning difficult discriminations and in social situations in which irrelevant motives may be aroused. Hence we must recognize and provide for their resolution or accommodation.

B. *Principles emphasized in cognitive theory*
1. *The perceptual features* of the problem given the learner are important conditions of learning—figure-ground relations, directional signs, sequence, organic interrelatedness. Hence a learning problem should be so structured and presented that the essential features are open to the inspection of the learner.
2. The *organization of knowledge* should be an essential concern of the teacher or educational planner so that the direction from simple to complex is *not* from arbitrary, meaningless parts to meaningful wholes, but instead from *simplified wholes to more complex wholes.*
3. Learning is *culturally relative*, and both the wider culture and the subculture to which the learner belongs may affect his learning.
4. *Cognitive feedback* confirms correct knowledge and corrects faulty learning. The learner tries something provisionally and then accepts or rejects what he does on the basis of its consequences. This is, of course, the cognitive equivalent of reinforce-

ment in S-R theory, but cognitive theory tends to place more emphasis upon a kind of hypothesis-testing through feedback.

5. *Goal-setting* by the learner is important as motivation for learning and his successes and failures determine how he sets future goals.
6. *Divergent thinking*, which leads to inventive problem solving or the creation of novel and valued products, is to be nurtured along with *convergent* thinking, which leads to logically correct answers.

C. *Principles from motivation and personality theory*

1. The learner's *abilities* are important, and provisions have to be made for slower and more rapid learners, as well as for those with specialized abilities.
2. *Postnatal development* may be as important as hereditary and congenital determiners of ability and interest. Hence the learner must be understood in terms of the influences that have shaped his development.
3. Learning is *culturally relative*, and both the wider culture and the subculture to which the learner belongs may affect his learning.
4. *Anxiety level* of the individual learner may determine the beneficial or detrimental effects of certain kinds of encouragements to learn.
5. The same objective situation may tap *appropriate motives* for one learner and not for another, as for example, in the contrast between those motivated by affiliation and those motivated by achievement.
6. The *organization of motives* and values within the individual is relevant. Some long-range goals affect short-range activities. Thus college students of equal ability may do better in courses perceived as relevant to their majors than in those perceived as irrelevant.
7. The *group atmosphere* of learning (competition vs cooperation, authoritarianism vs democracy, individual isolation vs group identification) will affect satisfaction in learning as well as the products of learning. [Hilgard and Bower, 1966, pp. 562-564]

One reason for Hilgard's confidence that his twenty principles would be "in large part acceptable to all parties" is that he limits the "parties" with whom he checks them out to control-oriented theorists. In spite of their differences about the internal mechanics of learning, they are fairly close in their conceptualization of the role of the teacher.

Teaching Concepts Derived from Learning Theories about Animals and Children

Let's examine the concepts of a variety of theories about the nature of teaching and the role of the teacher. First, the members of Hilgard's jury.

Thorndike saw teaching essentially as the control of learning by the management of reward. The teacher and learner must know the characteristics of a good performance in order that practice may be appropriately arranged. Errors must be diagnosed so that they will not be repeated. The teacher is not primarily concerned with the internal states of the organism, but instead with structuring the situation so that rewards will operate to strengthen desired responses. The learner should be interested, problem-oriented and attentive. However, the best way to obtain these conditions is to manipulate the learning situation so that the learner accepts the problem posed because of the rewards involved. Attention is maintained and appropriate stimulus-response connections are strengthened through the precise application of rewards toward the goals set by the teacher. A teacher's role is to cause appropriate S-R bonds to be built up in the learner's behavior repertoire. [Hilgard and Bower, 1966, pp. 22-23; Pittenger and Gooding, 1971, pp. 82-83]

Hilgard summarizes Guthrie's suggestions for teaching as follows:

1. If you wish to encourage a particular kind of behavior or discourage another, discover the cues leading to the behavior in question. In the one case, arrange the situation so that the desired behavior occurs when those cues are present; in the other case, arrange it so that the undesired behavior does not occur in the presence of the cues. This is all that is involved in the skillful use of reward and punishment. A student does not learn what was in a lecture or a book. He learns only what the lecture or book caused him to do.
2. Use as many stimulus supports for desired behavior as possible, because any ordinary behavior is a complex of movements to a complex of stimuli. The more stimuli there are associated with the desired behavior, the less likely that distracting stimuli and competing behavior will upset the desirable behavior. [Hilgard and Bower, 1966, pp. 86-87]

From B.F. Skinner's vantage point, "Teaching is simply the arrangement of contingencies of reinforcement." [Skinner, 1968, p.

5] Subsequent statements in *The Technology of Teaching* throw further light on his position:

> Some promising advances have recently been made in the field of learning. Special techniques have been designed to arrange what are called contingencies of reinforcement—the relations which prevail between behavior on the one hand and the consequences of behavior on the other—with the result that a much more effective control of behavior has been achieved. [p. 9]

> Comparable results have been obtained with pigeons, rats, dogs, monkeys, human children and psychotic subjects. In spite of great phylogenic differences, all these organisms show amazingly similar properties of the learning process. It should be emphasized that this has been achieved by analyzing the effects of reinforcement with considerable precision. Only in this way can the behavior of the individual organism be brought under such precise control. [p. 14]

> A teaching machine is simply any device which arranges contingencies of reinforcement. There are as many different kinds of machines as there are different kinds of contingencies. Early experimenters manipulated stimuli and reinforcers and recorded responses by hand, but current research without the help of extensive apparatus is unthinkable. The teacher needs similar instrumental support, for it is impossible to arrange many of the contingencies of reinforcement which expedite learning without it. Adequate apparatus has not eliminated the researcher, and teaching machines will not eliminate the teacher. [p. 65]

> In college and graduate schools the aversive pattern survives in the now almost universal system of "assign and test." The teacher does not teach, he simply holds the student responsible for learning. The student must read books, study tests, perform experiments, and attend lectures, and he is responsible for doing so in the sense that, if he does not correctly report what he has seen, heard, or read, he will suffer aversive consequences . . . . A test which proves to be too easy is made harder before being given again, ostensibly because an easy test does not discriminate, but more probably because the teacher is afraid of weakening the threat under which his students are working. A teacher is judged by his employers and colleagues by the severity of the threat he imposes: he is a good teacher if he makes his students work hard, regardless of how he does so or of how much he teaches them by doing so. [pp. 99-100]

> The human organism does, of course, learn without being taught. It is a good thing that this is so, and it would no doubt be a good thing if more could be learned in that way . . . But discovery is no solution to the problems of education. A culture is no stronger than its capacity to transmit itself. It must impart an accumulation of skills, knowledge, and social and ethical practices to its new members. The institution of education is designed to serve this purpose . . . It is dangerous to suggest to the student that it is beneath his dignity to learn what others already know, that there is something ignoble (and even destructive of "rational powers") in memorizing facts, codes, formulae, or passages from literary works, and that to be admired he must think in original ways. It is equally dangerous to forego teaching important facts and principles in order to give the student a chance to discover them for himself. [p. 110]

Hull was primarily concerned with the development of a systematic behavior theory that would improve the laboratory study of learning, and so he gave little attention to its implications for teaching. In assessing the significance of his work for education, Kingsley and Garry point out:

> Systematic order and arrangement would characterize the class room patterned after Hull's theory. The development of habits and skills would proceed from the simple to the complex with a clear understanding of the stimuli and responses to be associated. The program would have to be dynamic and stimulating in view of the central position that reinforcement holds, inasmuch as aroused drives which can be reduced by satisfying outcomes are an essential condition of learning . . . Practice would be presented for the purpose of building the desired habits and maintaining them, but would not proceed to the point at which the increase in inhibition from repeating the same response would make the child reluctant to respond. [Kingsley and Garry, 1957, pp. 104-105]

Tolman was also principally concerned with the laboratory study of learning, and Kingsley and Garry point out that "the fact that

Tolman accepts different forms of learning makes it more difficult to infer how an educational program which followed his theory literally would operate." But the teacher's task would be concerned primarily with "the creating of stimulus-conditions which make it possible for the learner to perceive clearly what leads to what, and to understand the different means by which a given goal can be reached. Emphasis would be placed upon making vivid the relationships between the parts and the whole . . . Because of variations in capacity with age, previous experience, etc., it would be necessary to select learning tasks which can be perceived as wholes." [Kingsley and Garry, 1957, pp. 119-120]

The gestalt psychologists saw the teacher's task as being essentially to help the individual see significant relationships and to manage instruction so that he organizes his experiences into functional patterns. Through verbal explanations, showing pictures, putting words on chalkboards, presenting reading matter, and many other teaching activities, the teacher provides stimulating situations.

> For this reason, careful lesson planning with due regard for suitable arrangement and orderly presentation is essential for good teaching. Practices conducive to the establishment of appropriate relations and organization include starting with the familiar, basing each step on those already taken, putting together facts which belong together, grouping items according to their natural connections, placing subtopics under the topic to which they belong, using illustrations based on the learner's experience, giving major emphasis to essentials, centering supporting details around the main points, and avoiding irrelevant details. [Kingsley and Garry, 1957, pp. 111-112]

Furthermore, all the divisions and topics of each subject must be integrated, and all the various subjects of a course or program must be related to one another.

Robert Gagne in *The Conditions of Learning* (1965) agrees with these learning theorists that teaching means the arranging of conditions that are external to the learner [p. 26], but he disagrees that learning is a phenomenon which can be explained by simple theories. He believes that there are eight distinct types of learning, each with its own set of required conditions, as follows:

> Type 1: *Signal Learning.* The individual learns to make a general, diffuse response to a signal. This is the classical conditioned response of Pavlov.
>
> Type 2: *Stimulus-Response Learning.* The learner acquires a precise response to a discriminated stimulus. What is learned is a connection (Thorndike) or a discriminated operant (Skinner), sometimes called an instrumental response (Kimble).
>
> Type 3: *Chaining.* What is acquired is a chain of two or more stimulus-response connections. The conditions for such learning have been described by Skinner and others.
>
> Type 4: *Verbal Association.* Verbal association is the learning of chains that are verbal. Basically, the conditions resemble those for other (motor) chains. However, the presence of language in the human being makes this a special type because internal links may be selected from the individual's previously learned repertoire of language.
>
> Type 5: *Multiple Discrimination.* The individual learnes to make *n* different identifying responses to as many different stimuli, which may resemble each other in physical appearance to a greater or lesser degree.
>
> Type 6: *Concept Learning.* The learner acquires a capability of making a common response to a class of stimuli that may differ from each other widely in physical appearance. He is able to make a response that identifies an entire class of objects or events.
>
> Type 7: *Principle Learning.* In simplest terms, a principle is a chain of two or more concepts. It functions to control behavior in the manner suggested by a verbalized rule of the form "If A, then B," which, of course, may also be learned as type 4.
>
> Type 8: *Problem Solving.* Problem solving is a kind of learning that requires the internal events usually called thinking. Two or more previously acquired principles are somehow combined to produce a new capability that can be shown to depend on a "higher-order" principle. [pp. 58-59]

Gagne further believed that the most important class of conditions that distinguishes one form of learning from another is its prerequisites, since the types are in hierarchical order, as follows:

Problem solving (type 8) requires as prerequisites:
Principles (type 7), which require as prerequisites:
Concepts (type 6), which require as prerequisites:
Multiple discriminations (type 5), which require as prerequisites:
Verbal associations (type 4) or other chains (type 3), which require as prerequisites:
Stimulus-response connections (type 2). [p. 60]

Gagne specifies eight component functions of the instructional situation, representing the ways in which the learner's environment acts on him, that must be managed by the teacher:

1. *Presenting the stimulus.* Every type of learning requires a stimulus, and usually these stimuli must be located within the learning environment. outside the learner. If a chain is being learned, an external cue must be provided for each link, even though these may become unnecessary later. If multiple discrimination is to be accomplished, the stimuli to be discriminated must be displayed so that correct connections can become differentiated from incorrect ones. If concepts are being learned, a suitable variety of objects or events representing a class must be displayed. If principles are being acquired, the stimulus objects to which they are expected to apply must somehow be represented to the student. And if problem solving is undertaken, the "problem situation" must similarly be represented in many different ways by objects already in the learner's environment, or by means of pictures, printed books, or oral communication.
2. *Directing attention and other learner activities.* Environmental components also act on the learner by directing his attention to certain stimuli or aspects of stimulus objects and events. In very young children, vivid or suddenly changing stimulation may be used for this purpose. Very soon these can be supplanted by oral commands, and later still by printed directions such as, "Notice the number of electrons in the outer ring," or "Look at the graph in Figure 23." Activities other than attention may also be directed by such instructions, as implied by the statements, "Remember how a line is defined," or "Complete the following sentence." These activities are not themselves learning; they are simply actions that must be taken by the learner in order to create the proper conditions for learning. Verbal directions that have these purposes can be presented either orally or in printed form.

3. *Providing a model for terminal performance.* The importance of the function of informing the learner about the general nature of the performance to be acquired has been emphasized previously on several occasions. There is no single way of doing this, and many different components of the instructional situation may be employed. Most commonly, the "model" of performance to be expected following learning is conveyed by oral or printed communication.
4. *Furnishing external prompts.* In learning chains as well as multiple discriminations, cues may be provided in the instructional situation to establish a proper sequence of connections or to increase the distinctiveness of stimuli. As learning proceeds, these extra cues may be made to "vanish" when they are no longer needed. Stimuli that function as extra cues may take a variety of forms. For example, they may be pictorial, as when a sequence is depicted in a diagram reading from left to right. Or they may be auditory, as in emphasizing the differences in sound of such French words as *rue* and *rouge*. Verbal stimuli are often employed for both these purposes, as well as for the purpose of furnishing distinctive "coding links" in verbal chains. In Gilbert's (1962) example of learning color coding for resistors, the word "penny" is provided as a link between *brown* and *one*, the word "nothingness" as a link between *black* and *zero*.
5. *Guiding the direction of thinking.* When principles are being learned, and particularly when learning takes the form of problem solving, the direction of recalled internal connections (thoughts) may be guided by instructions from the learner's environment. As described previously, such guidance is presumed to have the effect of increasing the efficiency of learning by reducing the occurrence of irrelevant "hypotheses." Generally, instructions having this function of "hinting" and "suggesting" take the form of oral or printed prose statements.
6. *Inducing transfer of knowledge.* Providing for the transfer of learned concepts and principles to novel situations may be accomplished in a number of ways. The conduct of discussion is one of the most convenient. Obviously, this is a special kind of interaction between the learner and his environment, and it is not possible to specify exactly what form will be taken at any given moment by stimulation from the environment. The process is usually initiated, however, by verbally stated questions of the "problem-solving" variety. An important alternative method is to place the individual within a problem situation more or less directly, without the use of words to describe it. A science demonstration may be used to serve this function. Also, motion pictures can be used with considerable

effectiveness to initiate problem-solving discussion by "getting the students into the situation" in a highly realistic manner.

7. *Assessing learning attainments.* The environment of the learner also acts on him to assess the extent to which he has attained a specific learning objective or subobjective. It does this by deliberately placing him in representative problem situations that concretely reflect the capability he is expected to have learned. Most frequently, this is done by asking him questions. Although it is conceivable for the learner to formulate for himself the questions to be asked, this is difficult to do even for the experienced adult learner. Preferably, the questions must come from an independent source, so that they will be uninfluenced by the learner's wishes, but will accurately represent the objective.
8. *Providing feedback.* Closely related to assessment of learning outcomes is the provision for feedback concerning the correctness of the learner's responses. The questions that are asked the learner, followed by his answers, must in turn be followed by information that tells him whether he is right or wrong. Sometimes, the provision for this feedback function of the learner's environment is very simple to arrange: a foreign word pronounced by the student may sound like one he hears on a tape; the color of a chemical solution may indicate the presence of an element he is searching for. At other times it may be considerably more complex, as when the adequacy of a constructed prose paragraph describing an observed event is assessed, and the results fed back to the student.

These eight functions, then, represent the ways in which the learner's environment acts on him. These are the external conditions of learning that, when combined with certain prerequisite capabilities within the learner, bring about the desired change in his performance. Obviously, there are many ways to establish these conditions in the learning environment, and many combinations of objects, devices, and verbal communications may be employed in doing so. Probably the most important consideration for the design of the learning environ- ment, however, is not that several alternative ways of accomplishing the same function are usually available. Rather, the important point is that for a given function, certain means of interacting with the learner are quite ineffective. Accordingly, the characteristics of various *media of instruction* in performing these functions need to be considered carefully in making a choice. [Gagne, 1965, pp. 268-271]

These are the learning theorists who Hilgard believed would agree with his twenty principles (with the exception of the motiva-

tion and personality theorists, whom Hilgard didn't identify, so we can't check with them directly). Obviously these theorists are unanimous in seeing teaching as the management of procedures which will assure specified behavioral changes as prescribed learning products. The role of the teacher, therefore, is that of a shaper of behavior. Stated this baldly, it smacks of what contemporary critics of education see as a God-playing role. [Bereiter, 1972, p. 25; Illich, 1970, p. 30]

Teaching Concepts Derived from Learning Theories of Adults

These were theories based primarily on studies of animals and children. When we look at the concepts of teaching of those theorists who derived their theories of learning primarily from studies of adults they are very different. Carl Rogers makes one of the sharpest breaks in his lead statement:

> Teaching, in my estimation, is a vastly over-rated function. Having made such a statement, I scurry to the dictionary to see if I really mean what I say. Teaching means 'to instruct.' Personally I am not much interested in instructing another in what he should know or think. 'To impart knowledge or skill.' My reaction is, why not be more efficient, using a book or programmed learning? 'To make to know.' Here my hackles rise. I have no wish to *make* anyone know something. 'To show, guide, direct.' As I see it, too many people have been shown, guided, directed. So I come to the conclusion that I *do* mean what I said. Teaching is, for me, a relatively unimportant and vastly overvalued activity. [Rogers, 1969, p. 103]

Rogers goes on to explain that in his view teaching and the imparting of knowledge make sense in an unchanging environment, which is why it has been an unquestioned function for centuries. "But if there is one truth about modern man, it is that he lives in an environment which is *continually changing,*" and therefore the aim of education must be the *facilitation of learning.* [*Ibid.*, pp. 104-105] He defines the role of the teacher as that of a *facilitator of learning.* The critical element in performing this role is the personal relationship between the facilitator and the learner, which in turn is dependent on the facilitator's possessing three attitudinal qualities:

(1) realness or genuineness, (2) nonpossessive caring, prizing, trust, and respect, and (3) empathic understanding and sensitive and accurate listening. [*Ibid.*, pp. 106-126]

He provides the following guidelines for a facilitator of learning:

1. *The facilitator has much to do with setting the initial mood or climate of the group or class experience.* If his own basic philosophy is one of trust in the group and in the individuals who compose the group, then this point of view will be communicated in many subtle ways.

2. *The facilitator helps to elicit and clarify the purposes of the individuals in the class as well as the more general purposes of the group.* If he is not fearful of accepting contradictory purposes and conflicting aims, if he is able to permit the individuals a sense of freedom in stating what they would like to do, then he is helping to create a climate for learning.

3. *He relies upon the desire of each student to implement those purposes which have meaning for him as the motivational force behind significant learning.* Even if the desire of the student is to be guided and led by someone else, the facilitator can accept such a need and motive and can either serve as a guide when this is desired or can provide some other means, such as a set course of study, for the student whose major desire is to be dependent. And, for the majority of students, he can help to utilize a particular individual's own drives and purposes as the moving force behind his learning.

4. *He endeavors to organize and make easily available the widest possible range of resources for learning.* He endeavors to make available writings, materials, psychological aids, persons, equipment, trips, audio-visual aids—every conceivable resource which his students may wish to use for their own enhancement and for the fulfillment of their own purposes.

5. *He regards himself as a flexible resource to be utilized by the group.* He does not downgrade himself as a resource. He makes himself available as a counselor, lecturer, and advisor, a person with experience in the field. He wishes to be used by individual students, and by the group, in ways which seem most meaningful to them insofar as he can be comfortable in operating in the ways they wish.

6. *In responding to expressions in the classroom group, he accepts both intellectual content and the emotionalized attitudes, endeavoring to give each aspect the approximate degree of emphasis which it has for the individual or the group.* Insofar as he can be genuine in doing so, he accepts rationalizations and intellectualizing, as well as deep and real personal feelings.

7. *As the acceptant classroom climate becomes established, the facilitator is able increasingly to become a participant learner, a member of the group, expressing his views as those of one individual only.*

8. *He takes the initiative in sharing himself with the group—his feelings as well as his thoughts—in ways which do not demand or impose but represent simply the personal sharing which students may take or leave.* Thus, he is free to express his own feelings in giving feedback to students, in his reaction to them as individuals, and in sharing his own satisfactions or disappointments. In such expressions it is his "owned" attitudes which are shared, not judgments of evaluations of others.

9. *Throughout the classroom experience, he remains alert to the expressions indicative of deep or strong feelings.* These may be feelings of conflict, pain, and the like, which exist primarily within the individual. Here he endeavors to understand these from the person's point of view and to communicate his empathic understanding. On the other hand, the feelings may be those of anger, scorn, affection, rivalry, and the like—interpersonal attitudes among members of the group. Again he is as alert to these as to the ideas being expressed and by his acceptance of such tensions or bonds he helps to bring them into the open for constructive understanding and use by the group.

10. *In his functioning as a facilitator of learning, the leader endeavors to recognize and accept his own limitations.* He realizes that he can only grant freedom to his students to the extent that he is comfortable in giving such freedom. He can only be understanding to the extent that he actually desires to enter the inner world of his students. He can only share himself to the extent that he is reasonably

comfortable in taking that risk. He can only participate as a member of the group when he actually feels that he and his students have an equality as learners. He can only exhibit trust of the students' desire to learn insofar as he feels that trust. There will be many times when his attitudes are not facilitative of learning. He will find himself being suspicious of his students. He will find it impossible to accept attitudes which differ strongly from his own. He will be unable to understand some of the student feelings which are markedly different from his own. He may find himself feeling strongly judgmental and evaluative. When he is experiencing attitudes which are nonfacilitative, he will endeavor to get close to them, to be clearly aware of them, and to state them just as they are within himself. Once he has expressed these angers, these judgments, these mistrusts, these doubts of others and doubts of himself, as something coming from within himself, not as objective facts in outward reality, he will find the air cleared for a significant interchange between himself and his students. Such an interchange can go a long way toward resolving the very attitudes which he has been experiencing, and thus make it possible for him to be more of a facilitator of learning. [Rogers, 1969, pp. 164-166]

Although Maslow does not spell out his conception of the role of teacher, he no doubt would subscribe to Rogers' guidelines, with perhaps a bit more emphasis on the teacher's responsibility for providing safety. Several followers of both Rogers and Maslow have experimented with translating their theories into classroom behavior. George Brown, for example, describes the development of confluent education ("the term for the integration or flowing together of the affective and cognitive elements in individual and group learning") in the Ford-Esalen Project in Affective Education in California in the late 1960's in his *Human Teaching for Human Learning*, 1971. Elizabeth Drews describes an experiment to test a new program designed to foster self-initiated learning and self-actualization in ninth graders in Michigan, in which the teachers defined their roles as facilitators of learning. [Drews, 1966]

Flowing in the same stream of thought, Goodwin Watson provides the following summary of "what is known about learning"—which is easily read as "guidelines for the facilitation of learning":

1. Behavior which is rewarded—from the learner's point of view—is more likely to recur.
2. Sheer repetition without reward is a poor way to learn.
3. Threat and punishment have variable effects upon learning, but they can and do commonly produce avoidance behavior—in which the reward is the diminution of punishment possibilities.
4. How "ready" we are to learn something new is contingent upon the confluence of diverse—and changing—factors, some of which include:
   a. adequate existing experience to permit the new to be learned (we can learn only in relation to what we already know);
   b. adequate significance and relevance for the learner to engage in learning activity (we learn only what is appropriate to our purposes);
   c. freedom from discouragement, the expectation of failure, or threats to physical, emotional, or intellectual well-being.
5. *Whatever* is to be learned will remain unlearnable if we believe that we cannot learn it or if we perceive it as irrelevant or if the learning situation is perceived as threatening.
6. Novelty (per 4 and 5 above) is generally rewarding.
7. We learn best that which we participate in selecting and planning ourselves.
8. Genuine participation (as compared with feigned participation intended to avoid punishment) intensifies motivation, flexibility, and rate of learning.
9. An autocratic atmosphere (produced by a dominating teacher who controls direction via intricate punishments) produces in learners apathetic conformity, various—and frequently devious—kinds of defiance, scapegoating (venting hostility generated by the repressive atmosphere on colleagues), or escape . . . An autocratic atmosphere also produces increasing dependence upon the authority, with consequent obsequiousness, anxiety, shyness, and acquiescence.
10. "Closed," authoritarian environments (such as are characteristic of most conventional schools and classrooms) condemn most

learners to continuing criticism, sarcasm, discouragement, and failure so that self-confidence, aspiration (for anything but escape), and a healthy self-concept are destroyed.

11. The best time to learn anything is when whatever is to be learned is immediately useful to us.
12. An "open," nonauthoritarian atmosphere can, then, be seen as conducive to learner initiative and creativity, encouraging the learning of attitudes of self-confidence, originality, self-reliance, enterprise, and independence. All of which is equivalent to learning how to learn. [Watson, 1960-1961]

Houle has proposed a "fundamental system" of educational design which rests on seven assumptions:

1. Any episode of learning occurs in a specific situation and is profoundly influenced by that fact.
2. The analysis or planning of educational activities must be based on the realities of human experience and upon their constant change.
3. Education is a practical art (like architecture) which draws on many theoretical disciplines in the humanities, and the social and biological sciences.
4. Education is a cooperative rather than an operative art. ("An operative art is one in which the creation of a product or performance is essentially controlled by the person using the art . . . A cooperative art . . . works in a facilitative way by guiding and directing a natural entity or process. The farmer, physician, and educator are three classic examples of cooperative artists.")
5. The planning or analysis of an educational activity is usually undertaken in terms of some period which the mind abstracts for analytical purposes from the complicated reality.
6. The planning or analysis of an educational activity may be undertaken by an educator, a learner, an independent analyst, or some combination of the three.
7. Any design of education can best be understood as a complex of interacting elements, not as a sequence of events. [Houle, 1972, pp. 32-39]

He then identifies the following components in his fundamental system, which it is the task of the educator to manage:

1. A possible educational activity is identified.
2. A decision is made to proceed.
3. Objectives are identified and refined.
4. A suitable format is designed.
   a. Learning resources are selected.
   b. A leader or group of leaders is chosen.
   c. Methods are selected and used.
   d. A time schedule is made.
   e. A sequence of events is devised.
   f. Social reinforcement of learning is provided.
   g. The nature of each individual learner is taken into account.
   h. Roles and relationships are made clear.
   i. Criteria for evaluating progress are identified.
   j. The design is made clear to all concerned.
5. The format is fitted into larger patterns of life.
   a. Learners are guided into or out of the activity both at the beginning and subsequently.
   b. Life styles are modified to allow time and resources for the new activity.
   c. Financing is arranged.
   d. The activity is interpreted to related publics.
6. The program is carried out.
7. The results of the activity are measured and appraised.
8. The situation is examined in terms of the possibility of a new educational activity. [*Ibid.*, pp. 48-56]

Because Tough's studies have been concerned with the self-initiated learning projects of adults, he has focused on the "helping role" of the teacher or other resource person. His investigations have produced the following "fairly consistent composite picture of the ideal helper":

> One cluster of characteristics might be summarized by saying that the ideal helper is warm and loving. He accepts and cares about the learner and about his project or problem, and takes it seriously. He is willing to spend time helping. He is approving, supportive, encouraging, and friendly. He regards the learner as an equal. As a result of these characteristics, the learner feels free to approach this ideal helper, and can talk freely and easily with him in a warm and relaxed atmosphere.

A second cluster of characteristics involves the helper's perceptions of the person's capacity as a self-planner. The ideal helper has confidence in the learner's ability to make appropriate plans and arrangements for this learning. The helper has a high regard for his skill as a self-planner, and does not want to take the decision-making control away from him.

Third, the ideal helper views his interaction with the learner as a dialogue, a true encounter in which he listens as well as talks. His help will be tailored to the needs, goals, and requests of this unique learner. The helper listens, accepts, understands, responds, helps. These perceptions of the interaction are in sharp contrast to those of "helpers" who want to control, command, manipulate, persuade, influence, and change the learner. Such helpers seem to view communication as "an inexhaustible monologue, addressed to everyone and no one in the form of 'mass communication' . . . Such a helper perceives the learner as an object, and expects to do something *to* that object. He is not primarily interested in the other person as a person, and in his needs, wishes, and welfare."

Another cluster of internal characteristics involves the helper's reasons for helping. He may help because of his affection and concern for the learner. Or the helper may, in an open and positive way, expect to gain as much as he gives. Other sorts of motivation, too, are possible—pleasure for knowing he was helpful, satisfaction from seeing progress or from the learner's gratitude . . .

Finally, the ideal helper is probably an open and growing person, not a closed, negative, static, defensive, fearful, or suspicious sort of person. He himself is frequently a learner, and seeks growth and new experiences. He probably tends to be spontaneous and authentic, and to feel free to behave as a unique person rather than in some stereotyped way. [Tough, 1979, pp. 195–197]

These characteristics fit well into my own conception of the role of the andragogical teacher, which I have attempted to make operational as a set of principles as shown in Table 4-1.

Table 4-1.
The Role of the Teacher

Conditions of Learning	Principles of Teaching
The learners feel a need to learn.	1. The teacher exposes students to new possibilities of self-fulfillment. 2. The teacher helps each student clarify his own aspirations for improved behavior. 3. The teacher helps each student diagnose the gap between his aspiration and his present level of performance. 4. The teacher helps the students identify the life problems they experience because of the gaps in their personal equipment.
The learning environment is characterized by physical comfort, mutual trust and respect, mutual helpfulness, freedom of expression, and acceptance of differences:	5. The teacher provides physical conditions that are comfortable (as to seating, smoking, temperature, ventilation, lighting, decoration) and conducive to interaction (preferably, no person sitting behind another person). 6. The teacher accepts each student as a person of worth and respects his feelings and ideas. 7. The teacher seeks to build relationships of mutual trust and helpfulness among the students by encouraging cooperative activities and refraining from inducing competitiveness and judgmentalness.

(continued on next page)

Table 4-1. continued

Conditions of Learning	Principles of Teaching
	8. The teacher exposes his own feelings and contributes his resources as a colearner in the spirit of mutual inquiry.
The learners perceive the goals of a learning experience to be their goals.	9. The teacher involves the students in a mutual process of formulating learning objectives in which the needs of the students, of the institution, of the teacher, of the subject matter, and of the society are taken into account.
The learners accept a share of the responsibility for planning and operating a learning experience, and therefore have a feeling of commitment toward it.	10. The teacher shares his thinking about options available in the designing of learning experiences and the selection of materials and methods and involves the students in deciding among these options jointly.
The learners participate actively in the learning process.	11. The teacher helps the students to organize themselves (project groups, learning-teaching teams, independent study, etc.) to share responsibility in the process of mutual inquiry.
The learning process is related to and makes use of the experience of the learners.	12. The teacher helps the students exploit their own experiences as resources for learning through the use of such techniques as discussion, role playing, case method, etc. 13. The teacher gears the presentation of his own resources to the levels of experience of his particular students.

Table 4.1. continued

Conditions of Learning	Principles of Teaching
	14. The teacher helps the students to apply new learning to their experience, and thus to make the learnings more meaningful and integrated.
The learners have a sense of progress toward their goals.	15. The teacher involves the students in developing mutually acceptable criteria and methods for measuring progress toward the learning objectives. 16. The teacher helps the students develop and apply procedures for self-evaluation according to these criteria.

[Knowles, 1980, pp. 57-58]

Concepts of Teaching Derived from Theories of Teaching

Some teaching theories have evolved directly from learning theories, especially the mechanistic models. Other theories of teaching evolved from analyses of teacher behavior and its consequences and from experimenting with manipulation of the variables in the teaching-learning situation. Since the previous section has presented teaching theories derived from learning theories, let us turn now to concepts derived from theories of teaching.

Dewey's Concepts

Perhaps the most impactful system of ideas about effective teaching was propounded by John Dewey during the first half of

this century. Dewey contrasted his basic principles with those of traditional education:

> To imposition from above is opposed expression and cultivation of individuality; to external discipline is opposed free activity; to learning from texts and teacher, learning through experience; to acquisition of isolated skills and techniques by drill, is opposed acquisition of them as means of attaining ends which make direct vital appeal; to preparation for a more or less remote future is opposed making the most of the opportunities of present life; to static aims and materials is opposed acquaintance with a changing world. [Dewey, 1938, pp. 5-6]

Dewey's system is organized around several key concepts. The central concept is *experience:*

> All genuine education comes about through experience. [*Ibid.*, p. 13]

> The central problem of an education based upon experience is to select the kind of present experiences that live fruitfully and creatively in subsequent experiences. [*Ibid.*, pp. 16-17]

A second key concept is *democracy:*

> The question I would raise concerns why we prefer democratic and humane arrangements to those which are autocratic and harsh . . . Can we find any reason that does not ultimately come down to the belief that democratic social arrangements promote a better quality of human experience, one which is more widely accessible and enjoyed, than do non-democratic and anti-democratic forms of social life? [*Ibid.*, pp. 24-25]

Another key concept is *continuity:*

> The principle of continuity of experience means that every experience both takes up something from those which have gone before and modifies in some way the quality of those which come after . . . Growth, or growing and developing, not only physically but intellectually and morally, is one exemplification of the principle of continuity. [*Ibid.*, pp. 27-28]

> It is worth while to say something about the way in which the adult [teacher] can exercise the wisdom his own wider experience gives him without imposing a merely external control. On one side, it is his business to be on the alert to see what attitudes and habitual tendencies are being created. In this direction he must, if he is an educator, be able to judge what attitudes are actually conducive to continued growth and what are detrimental. He must, in addition, have that sympathetic understanding of individuals as individuals which gives him an idea of what is actually going on in the minds of those who are learning. [*Ibid.*, p. 33]

> A primary responsibility of educators is that they not only be aware of the general principle of the shaping of actual experience by environing conditions, but that they also recognize in the concrete what surroundings are conducive to having experiences that lead to growth. Above all, they should know how to utilize the surroundings, physical and social, that exist so as to extract from them all that they have to contribute to building up experiences that are worth while. [*Ibid.*, p. 35]

Another key concept is *interaction:*

> The word "interaction" expresses the second chief principle for interpreting an experience in its educational function and force. It assigns equal rights to both factors in experience—objective and internal conditions. Any normal experience is an interplay of these two sets of conditions. Taken together, or in their interaction, they form what we call a *situation.* The trouble with traditional education was not that it emphasized the external conditions that enter into the control of the experiences but that it paid so little attention to the internal factors which also decide what kind of experience is had [the powers and purposes of those taught]. [*Ibid.*, pp. 38-44]

> It is not the subject *per se* that is educative or that is conducive to growth. There is no subject that is in and of itself, or without regard to the stage of growth attained by the learner, [an end] such that inherent educational value may be attributed to it. Failure to take into account adaptation to the needs and capacities of individuals was the source of the idea that certain subjects and certain methods are intrinsically cultural or intrinsically good for mental discipline . . . In a certain sense every experience should do something to prepare a person for later experiences of a deeper and more expansive quality. That is the very meaning of growth, continuity, reconstruction of experience. [*Ibid.*, pp. 46-47]

> The educator is responsible for a knowledge of individuals and for a knowledge of subject-matter that will enable activities to be selected which lend themselves to social organization, an organization in which all individuals have an opportunity to contribute something, and in which the activities in which all participate are the chief carrier of control. . . . The principle that development of experience comes about through interaction means that education is essentially a social process. . . The teacher loses the position of external boss or dictator but takes on that of leader of group activities. [*Ibid.*, pp. 61-66]

> It is possible of course to abuse the office, and to force the activity of the young into channels which express the teacher's purpose rather than that of the pupils. But the way to avoid this danger is not for the adult to withdraw entirely. The way is, first, for the teacher to be intelligently aware of the capacities, needs, and past experiences of those under instruction, and, secondly, to allow the suggestion made to develop into a plan and project by means of the further suggestions contributed and organized into a whole by the members of the group. The plan, in other words, is a cooperative enterprise, not a dictation. [*Ibid.*, p. 85]

Many of Dewey's ideas were distorted, misinterpreted, and exaggerated during the heyday of the progressive school movement a generation ago, which is why I thought it important to quote him directly. In light of contemporary thinking about teaching, though, don't they seem fresh and useful?

Teaching through Inquiry

A second set of concepts about teaching with roots both in Dewey's ideas—especially his formulation of scientific thinking—and in those of the cognitive theorists is variously referred to as the discovery method, the inquiry method, self-directed learning or problem-solving learning.

Jerome Bruner, perhaps the most notable proponent of this approach to teaching, is in the process of constructing a theory of instruction that will meet these four criteria:

> 1. A theory of instruction should specify the experiences which most effectively implant in the individual a predisposition toward learning.

> 2. A theory of instruction must specify the ways in which a body of knowledge should be structured so that it can be most readily grasped by the learner.
> 3. A theory of instruction should specify the most effective sequences in which to present the materials to be learned.
> 4. A theory of instruction should specify the nature and pacing of rewards and punishments in the process of learning and teaching. [Bruner, 1966, pp. 40-41]

His system is predicated on the existence in all people of the will to learn.

> The will to learn is an intrinsic motive, one that finds both its source and its reward in its own exercise. The will to learn becomes a "problem" only under specialized circumstances like those of a school, where a curriculum is set, students confined, and a path fixed. The problem exists not so much in learning itself, but in the fact that what the school imposes often fails to enlist the natural energies that sustain spontaneous learning—curiosity, a desire for competence, aspiration to emulate a model, and a deep-sensed commitment to the web of social reciprocity [the human need to respond to others and to operate jointly with them toward an objective]. [*Ibid.*, pp. 125-127]

Bruner further makes a distinction between teaching in the *expository mode* and teaching in the *hypothetical mode.*

> In the former, the decisions concerning the mode and pace and style of exposition are principally determined by the teacher as expositor; the student is the listener. . .In the hypothetical mode, the teacher and the student are in a more cooperative position. . .The student is not a bench-bound listener, but is taking a part in the formulation and at times may play the principal role in it. [Bruner, 1961, p. 126]

The hypothetical mode leads to students' engaging in *acts of discovery,* a process which Bruner sees as having four benefits: (1) increasing intellectual powers, (2) shifting from extrinsic to intrinsic rewards, (3) learning the heuristics of discovering and (4) making material more readily accessible in memory. This mode is more congruent with and more likely to nurture the will to learn.

Bruner conveys the operational aspects of discovery teaching by describing it in action in case studies of actual courses. But Postman

and Weingartner provide the following list of behaviors observable in teachers using the inquiry method:

> *The teacher rarely tells students what he thinks they ought to know.* He believes that telling, when used as a basic teaching strategy, deprives students of the excitement of doing their own finding and of the opportunity for increasing their power as learners.
>
> *His basic mode of discourse with students is questioning.* While he uses both convergent and divergent questions, he regards the latter as the more important tool. He emphatically does not view questions as a means of seducing students into parroting the text or syllabus; rather, he sees questions as instruments to open engaged minds to unsuspected possibilities.
> *Generally, he does not accept a single statement as an answer to a question.* In fact, he has a persisting aversion to anyone, any syllabus, any text that offers The Right Answer. Not because answers and solutions are unwelcome—indeed, he is trying to help students be more efficient problem solvers—but because he knows how often The Right Answer serves only to terminate further thought. He knows the power of pluralizing. He does not ask for the reason, but for the reasons. Not for the cause, but the causes. Never the meaning, the meanings. He knows, too the power of contingent thinking. He is the most "It depends" learner in his class.
>
> *He encourages student-student interaction as opposed to student-teacher interaction. And generally he avoids acting as a mediator or judge of the quality of ideas expressed.* If each person could have with him at all times a full roster of authorities, perhaps it would not be necessary for individuals to make independent judgments. But so long as this is not possible, the individual must learn to depend on himself as a thinker. The inquiry teacher is interested in students' developing their own criteria or standards for judging the quality, precision, and relevance of ideas. He permits such development to occur by minimizing his role as arbiter of what is acceptable and what is not.
>
> *He rarely summarizes the positions taken by students on the learnings that occur.* He recognizes that the act of summary of "closure" tends to have the effect of ending further thought. Because he regards learning as a process, not a terminal event, his "summaries" are apt to be stated as hypotheses, tendencies, and directions. He assumes that no one ever learns once and for all how to write, or how to read, or what were the causes of the Civil War. Rather, he assumes that one is always in the process of acquiring skills, assimilating new information, formulating or refining generalizations. Thus, he is always cautious about defining the limits of learning, about saying, "This is what you will learn between now and the Christmas holidays," or even (especially), "This is what you will learn in the ninth grade." The only significant terminal behavior he recognizes is death, and he suspects that those who talk of learning as some kind of "terminal point" are either compulsive travelers or have simply not observed children closely enough. Moreover, he recognizes that learning does not occur with the same intensity in any two people, and he regards verbal attempts to disregard this fact as a semantic fiction. If a student has arrived at a particular conclusion, then little is gained by the teacher's restating it. If the student has not arrived at a conclusion, then it is presumptuous and dishonest for the teacher to contend that he has. (Any teacher who tells you precisely what his students learned during any lesson, unit, or semester quite literally does not know what he is talking about.)

> *His lessons develop from the responses of students and not from a previously determined "logical" structure.* The only kind of lesson plan, or syllabus, that makes sense to him is one that tries to predict, account for, and deal with the authentic responses of learners to a particular problem: the kinds of questions they will ask, the obstacles they will face, their attitudes, the possible solutions they will offer, etc. Thus, he is rarely frustrated or inconvenienced by "wrong answers," false starts, irrelevant directions. These are the stuff of which his best lessons and opportunities are made. In short, the "content" of his lessons are the responses of his students. Since he is concerned with the processes of thought rather than the end results of thought (The Answer!), he does not feel compelled to "cover ground" (There's the traveler again), or to insure that his students embrace a particular doctrine, or to exclude a student's idea because it is not germane. (Not germane to what? Obviously, it is germane to the student's thinking about the problem.) He is engaged in exploring the *way* students think, not what they should think (before the Christmas holidays). That is why he spends more of his time listening to students than talking to or at them.
>
> *Generally, each of his lessons poses a problem for students.* Almost all of his questions, proposed activities, and assignments are aimed at having his students clarify a problem, make observations relevant to the solution of the problem, and make generalizations based on their observations. His goal is to engage students in those activities which produce knowledge: defining, questioning, observing, classifying,

generalizing, verifying, applying. As we have said, *all knowledge is a result of these activities.* Whatever we think we "know" about astronomy, sociology, chemistry, biology, linguistics, etc., was dis-covered or invented by someone who was more or less an expert in us-ing inductive methods of inquiry. Thus, our inquiry, or "inductive," teacher is largely interested in helping his students to become more proficient as users of these methods.

He measures his success in terms of behavioral changes in students: the frequency with which they ask questions; the increase in the relevance and cogency of their questions; the frequency and conviction of their challenges to assertions made by other students or teachers or textbooks; the relevance and clarity of the standards on which they base their challenges; their willingness to suspend judgments when they have insufficient data; their willingness to modify or otherwise change their position when data warrant such change; the increase in their tolerance for diverse answers; their ability to apply generalizations, attitudes, and information to novel situations.

These behaviors and attitudes amount to a definition of a different *role* for the teacher from that which he has traditionally assumed. The inquiry environment, like any other school environment, is a series of human encounters, the nature of which is largely determined by the "teacher." "Teacher" is here placed in quotation marks to call atten-tion to the fact that most of its conventional meanings are inimical to inquiry methods. It is not uncommon, for example, to hear "teachers" make statements such as, "Oh, I taught them that, but they didn't learn it." There is no utterance made in the Teachers' Room more ex-traordinary than this. From our point of view, it is on the same level as a salesman's remarking, "I sold it to him, but he didn't buy it"—which is to say, it makes no sense. It seems to mean that "teaching" is what a "teacher" does, which, in turn, may or may not bear any relationship to what those being "taught" do. [Postman and Weingartner, 1969, pp. 34-37]

Suchman has described vividly the success of the Inquiry Training Project at the University of Illinois in developing inquiry skills in elementary school children. As a result of this experience, he feels confident in the feasibility of "an inquiry-centered curriculum."

> . . . in which the children would find themselves launched into areas of study by first being confronted by concrete problem-focused episodes for which they would attempt to build explanatory systems. Part of their data gathering might well be in the question-asking mode and certainly along the way time would have to be spent in building inquiry skills through critiques and other such procedures. Yet there would also be room for helping the children enlarge their conceptual systems through more teacher-directed means. [Suchman, 1972, p. 158]

Crutchfield counts four sets of skills involved in *productive thinking,* his synonym for problem-solving or inquiry learning.

> (1) skills of problem discovery and formulation
> (2) skill in organizing and processing problem information
> (3) skill in idea generation, and
> (4) skill in the evaluation of ideas. [Crutchfield, 1972, pp. 192-195]

The notion that the development of skills of inquiry should be a primary goal of youth education is the cornerstone of the concept of education as a lifelong process. This makes it especially significant that the Governing Board of the UNESCO Institute for Education in Hamburg, Germany decided in March 1972 to focus on research and experimental projects in an exploratory study, "The Concept of Lifelong Education and Its Implications for School Curriculum." A working paper I prepared for this study is reproduced in Appendix D.

Teaching through Modeling

The most elaborate system of thought on *imitation, identification* or *modeling* as concepts of teaching has been developed by Albert Bandura at Stanford University. He labels the system *social learning.* Bandura regards reinforcement theories of instrumental conditioning, such as Skinner's, as able to account for the control of previously learned matching responses, but unable to account for the way new response patterns are acquired through observation and imitation.

In teaching by modeling, the teacher behaves in ways that he wants the learner to imitate. The teacher's basic technique is *role modeling.* Bandura and Walters (1963) identified three kinds of effects from exposing the learner to a model: (1) a modeling effect, whereby the learner acquires new kinds of response patterns; (2) an inhibitory or disinhibitory effect, whereby the learner decreases or

increases the frequency, latency or intensity of previously acquired responses; and (3) an eliciting effect, whereby the learner merely receives from the model a cue for releasing a response that is neither new nor inhibited. For example, the modeling effect occurs when the teacher shows learners how to listen empathically to one another by himself listening empathically to them. The inhibiting or disinhibiting effect occurs when the teacher lets the learners know, through modeling, that it is or is not approved behavior to express their feelings openly, and thus inhibits or disinhibits an old response. The eliciting effect occurs when, through modeling, the teacher teaches the art of giving and receiving feedback by inviting the learners to criticize his own performance helpfully, thus providing a cue eliciting a response neither new nor inhibited.

Gage remarks that "Learning through imitation seems to be especially appropriate for tasks that have little cognitive structure." [Gage, 1972, p. 47] This observation seems to be borne out by the fact that social learning has been applied principally to behavioral modification in therapeutic settings to correct deviant or antisocial behavior, but its application to such positive educational purposes as the development of attitudes, beliefs, and performance skills has also been demonstrated. [Bandura, 1969, pp. 599-624] No doubt every teacher employs modeling as one of his techniques, whether consciously or unconsciously. His potency as a model will be influenced by such characteristics as age, sex, socio-economic status, social power, ethnic background, and intellectual and vocational status. [*Ibid.*, p. 195]

Although social learning has been employed chiefly to achieve behavioral changes through external management of reinforcement contingencies, in recent years there has been a growing interest in self-control processes in which individuals regulate their own behavior by arranging appropriate contingencies for themselves. These self-directed endeavors comprise a variety of strategies, about which Bandura makes these observations.

> The *selection of well-defined objectives,* both intermediate and ultimate, is an essential aspect of any self-directed program of change. The goals that individuals choose for themselves must be specified in sufficiently detailed behavioral terms to provide adequate guidance for the actions that must be taken daily to attain desired outcomes.

> To further increase goal commitment participants are asked to make *contractual agreements* to practice self-controlling behaviors in their daily activities. Thus, for example, in modifying smoking behavior [Tooley & Pratt, 1967] and obesity [Ferster, Nurnberger, & Levitt, 1962], clients agree to restrict increasingly, in graduated steps, the times and places in which they will engage in the undesired behavior. Under conditions where individuals voluntarily commit themselves to given courses of action, subsequent tendencies to deviate are likely to be counteracted by negative self-evaluations. Through this mechanism, and anticipated social reactions of others, contractual commitments reinforce adherence to corrective practices.

> Satisfactions derived from evident changes help to sustain successful endeavors, therefore, utilize *objective records of behavioral changes* as an additional source of reinforcement for their self-controlling behavior. . . .

> Since behavior is extensively under external stimulus control, persons can regulate the frequency with which they engage in certain activities by *altering stimulus conditions* under which the behavior customarily occurs. Overeating, for example, will arise more often when appetizing foods are prominently displayed in frequented places in the household than if they are stored out of sight and made less accessible. . . .

> Behavior that provides immediate positive reinforcement, such as eating, smoking, and drinking, tends to be performed in diverse situations and at varied times. Therefore, another important aspect of self-managed change involves progressive *narrowing of stimulus control* over behavior. Continuing with the obesity illustration, individuals are encouraged gradually to delimit the circumstances under which they eat until eventually their eating behavior is brought under control of a specific set of stimulus conditions. This outcome is achieved by having the clients commit themselves to a graduated program in which they refrain from eating in non-dining settings, between regular mealtimes, and while engaging in other activities such as watching television, reading, or listening to the radio. . . .

> The foregoing procedures are primarily aimed at instituting self-controlling behavior, but unless positive consequences are also arranged the well-intentioned practices are likely to be short-lived . . . Self-control measures usually produce immediate unpleasant effects while the personal benefits are considerably delayed. *Self-*

reinforcing operations are, therefore, employed to provide immediate support for self-controlling behavior until the benefits that eventually accrue take over the reinforcing function.

As a final feature of self-directed change programs, increases in desired behavior and reductions in undesired behavior are attempted gradually. In this way the incidence of experienced discomforts is kept low, and steady progress toward the eventual goal can be achieved. [Bandura, 1969, pp. 254-257]

Perspective Transformation/Critical Reflectivity

A recent new thrust in theorizing about the purpose of teaching/learning is the notion that it is not sufficient for adult education programs to satisfy the identified learning needs of individuals, organizations, and society, but that they should seek to help adult learners transform their very way of thinking about themselves and their world—what Mezirow calls "perspective transformation." [Mezirow, 1985] Brookfield (1986) proposes that this result can be accomplished through the development of competence in "critical reflectivity." He states his case in these words:

> It will be the case, then, that the most significant personal learning adults undertake cannot be specified in advance in terms of objectives to be obtained or behaviors (of whatever kind) to be performed. Thus, significant personal learning might be defined as that learning in which adults come to reflect on their self-images, change their self-concepts, question their previously internalized norms (behavioral and moral), and reinterpret their current and past behaviors from a new perspective . . .
>
> Significant personal learning entails fundamental change in learners and leads them to redefine and reinterpret their personal, social, and occupational worlds. In the process, adults may come to explore affective, cognitive, and psychomotor domains that they previously had not perceived as relevant to themselves. [Brookfield, 1986, pp. 213–214]

He points out that the addition of this "analytic component" to the role of the facilitator of learning

> . . . requires that the facilitators and practitioners prompt learners to consider alternative perspectives on their personal political, work, and social lives. Hence, effective facilitation means that learners will be challenged to examine their previously held values, beliefs, and behaviors and will be confronted with ones that they may not want to consider. Such challenges and confrontations need not be done in an adversarial, combative, or threatening manner; indeed, the most effective facilitator is one who can encourage adults to consider rationally and carefully perspectives and interpretations of the world that diverge from those they already hold, without making these adults feel they are being cajoled or threatened. This experience may produce anxiety, but such anxiety should be accepted as a normal component of learning and not something to be avoided at all costs for fear that learners will leave the group. There are forms of fulfillment that are quite unlike those produced by a wholly joyful encounter with a new form of knowledge or a new skill area. It is this dimension of increased insight through critical reflection on current assumptions and past beliefs and behaviors that is sometimes ignored in treatments of adult learning. [*Ibid.*, pp. 285–286]

Change Theory

Another system of thought that has great implications for educational practice has to do with influencing the educative quality of total environments. Concepts and strategies in this system are drawn from field theory, systems theory, organizational development and consultation theories, and ecological psychology.

The systems theorists have provided conceptual frameworks for analyzing organizations of all types as complex social systems with interacting subsystems [Cleland, 1969; Kast and Rosenzweig, 1970; Parsons, 1951; Seiler, 1967; Von Bertalanffy, 1968; Zadeh, 1969]. My own interpretation of some of the applications of their work for human resources development was presented in one of my previous books. [Knowles, 1980, pp. 66-68]

> One of the misconceptions in our cultural heritage is the notion that organizations exist purely to get things done. This is only one of their purposes; it is their *work* purpose. But every organization is also a social system that serves as an instrumentality for helping people meet human needs and achieve human goals. In fact, this is the primary purpose for which people take part in organizations—to meet their needs and achieve their goals—and when an organization does not serve this purpose for them they tend to withdraw from it. So organizations also have a human purpose.
>
> Adult education is a means available to organizations for furthering both purposes. Their work purpose is furthered to the extent that they

use adult education to develop the competencies of their personnel to do the work required to accomplish the goals of the organizations. Their human purpose is furthered to the extent that they use adult education to help their personnel develop the competencies that will enable them to work up the ladder of Maslow's hierarchy of needs for survival through safety, affection, and esteem to self-actualization.

As if by some law of reciprocity, therefore, organization provides an environment for adult education. In the spirit of Marshall McLuhan's *The Medium Is the Message,* the quality of learning that takes place in an organization is affected by the kind of organization it is. This is to say that an organization is not simply an instrumentality for providing organized learning activities to adults; it also provides an environment that either facilitates or inhibits learning.

For example, if a young executive is being taught in his corporation's management-development program to involve his subordinates in decision-making within his department, but his own superiors never involve him in making decisions, which management practice is he likely to adopt? Or if an adult church member is being taught to "love thy neighbor," but the total church life is characterized by discrimination, jealousy, and intolerance, which value is more likely to be learned? Or if an adult student in a course on "The Meaning of Democratic Behavior" is taught that the clearest point of differentiation between democracy and other forms of government is the citizen's sharing in the process of public policy formulation, but the teacher has never given him a chance to share responsibility for conducting the course and the institution has never asked his advice on what courses should be offered, what is he likely to learn about the meaning of democracy?

No educational institution teaches just through its courses, workshops, and institutes; no corporation teaches just through its in-service education programs; and no voluntary organization teaches just through its meetings and study groups. They all teach by everything they do, and often they teach opposite lessons in their organizational operation from what they teach in their educational program.

This line of reasoning has led modern adult-education theorists to place increasing emphasis on the importance of building an educative environment in all institutions and organizations that undertake to help people learn. What are the characteristics of an educative environment? They are essentially the manifestations of the conditions of learning listed at the end of the last chapter. But they can probably

be boiled down to four basic characteristics: 1.) respect for personality; 2.) participation in decision making; 3.) freedom of expression and availability of information; and 4.) mutuality of responsibility in defining goals, planning and conducting activities, and evaluating.

In effect, an educative environment—at least in a democratic culture—is one that exemplifies democratic values, that practices a democratic philosophy.

A democratic philosophy is characterized by a concern for the development of persons, a deep conviction as to the worth of every individual, and faith that people will make the right decisions for themselves if given the necessary information and support. It gives precedence to the growth of *people* over the accomplishment of *things* when these two values are in conflict. It emphasizes the release of human potential over the control of human behavior. In a truly democratic organization there is a spirit of mutual trust, an openness of communications, a general attitude of helpfulness and cooperation, and a willingness to accept responsibility, in contrast to paternalism, regimentation, restriction of information, suspicion, and enforced dependency on authority.

When applied to the organization of adult education, a democratic philosophy means that the learning activities will be based on the real needs and interests of the participants; that the policies will be determined by a group that is representative of all participants; and that there will be a maximum of participation by all members of the organization in sharing responsibility for making and carrying out decisions. The intimate relationship between democratic philosophy and adult education is eloquently expressed in these words of Eduard Lindeman:

One of the chief distinctions between conventional and adult education is to be found in the learning process itself. None but the humble become good teachers of adults. In an adult class the student's experience counts for as much as the teacher's knowledge. Both are exchangeable at par. Indeed, in some of the best adult classes it is sometimes difficult to discover who is learning most, the teacher or the students. This two-way learning is also reflected in the management of adult-education enterprises. Shared learning is duplicated by shared authority. In conventional education the pupils adapt themselves to the curriculum offered, but in adult education the pupils aid in formulating the curricula . . . Under democratic conditions authority is of the group. This is not an easy lesson to learn, but until it is learned democracy cannot succeed. [Gessner, 1956, p. 166]

I have a suspicion that for an organization to foster adult learning to the fullest possible degree it must go even farther than merely practicing a democratic philosophy, that it will really stimulate individual self-renewal to the extent that it consciously engages in continuous self-renewal for itself. Just as a teacher's most potent tool is the example of his own behavior, so I believe an organization's most effective instrument of influence is its own behavior.

This proposition is based on the premise that an organization tends to serve as a role model for those it influences. So if its purpose is to encourage its personnel, members, or constituents to engage in a process of continuous change and growth, it is likely to succeed to the extent that it models the role of organizational change and growth. This proposition suggests, therefore, that an organization must be innovative as well as democratic if it is to provide an environment conducive to learning. Table 4-2 provides some illustrative characteristics that seem to distinguish innovative from static organizations, as I interpret the insights from recent research on this fascinating subject. The right-hand column might well serve as a beginning check list of desirable organizational goals in the dimensions of structure, atmosphere, management philosophy, decision making, and communication.

An expanding group of applicators of systems theory are developing sophisticated procedures and tools for assessing organizational health, diagnosing needs for change, feeding data back into the system for continued renewal and using the data for precision in planning. [Baughart, 1969; Bushnell and Rappaport, 1972; Davis, 1966; Handy and Hussain, 1969; Hare, 1967; Hartley, 1968; Kaufman, 1972; Optner, 1965; Rudwick, 1969; Schuttenberg, 1972]

The change theorists, building largely on the field-theoretical concepts of Kurt Lewin, have been concerned with the planning of change, the choice and use of strategies of change, organizational development, the role of the consultant and change agent, management of conflict, intervention theory, resistance to change, human relations training and the ethics of change agentry. [Argyris, 1962, 1970; Bennis, 1966; Bennis, Benne, and Chin, 1968; Blake and Mouton, 1964; Eiben and Milliren, 1976; Greiner, 1971; Lewin, 1951; Lippitt, 1969; Schein, 1969; Watson, 1967; Zurcher, 1977]

Table 4-2.
Some Characteristics of Static Versus Innovative Organizations

DIMENSIONS	CHARACTERISTICS	
	Static Organizations	**Innovative Organizations**
Structure	Rigid—much energy given to maintaining permanent departments, committees; reverence for tradition, constitution & by-laws. Hierarchical—adherence to chain of command. Roles defined narrowly property-bound.	Flexible—much use of temporary task forces; easy shifting of departmental lines; readiness to change constitution, depart from tradition. Multiple linkages based on functional collaboration. Roles defined broadly Property-mobile.
Atmosphere	Task-centered, impersonal Cold, formal, reserved. Suspicious.	People-centered, caring. Warm, informal, intimate. Trusting.
Management Philosophy and Attitudes	Function of management is to control personnel through coercive power. Cautious—low risk-taking. Attitude toward errors: to be avoided. Emphasis on personnel selection. Self-sufficiency—closed system regarding sharing resources. Emphasis on conserving resources. Low tolerance for ambiguity.	Function of management is to release the energy of personnel; power is used supportively. Experimental—high risk-taking. Attitude toward errors: to be learned from. Emphasis on personnel development. Interdependency—open system regarding sharing resources. Emphasis on developing and using resources. High tolerance for ambiguity.
Decision-making and Policy-making	High participation at top, low at bottom. Clear distinction between policy-making and policy-execution. Decision-making by legal mechanisms. Decisions treated as final.	Relevant participation by all those affected. Collaborative policy-making and policy-execution. Decision-making by problem-solving. Decisions treated as hypotheses to be tested.
Communication	Restricted flow—constipated. One-way—downward. Feelings repressed or hidden.	Open flow—easy access. Multidirectional—up, down, sideways Feelings expressed.

[Knowles, 1980, p. 69]

A special focus of interest of a number of the researchers and practitioners in this field has been the use of groups as instruments in individual and organizational change. [Bradford, Benne, and Gibb, 1964; Hare, 1962 and 1969; Jaques, 1984; Knowles and Knowles, 1972; Schein and Bennis, 1965; Solomon and Berzon, 1972; Zander, 1982] It is probably a defensible generalization that one of the most pronounced trends in educational practice in schools, universities, industrial and governmental training, and adult education programs in community and voluntary agencies in the past two decades has been the increasing use of small groups.

The study of group dynamics has begun to produce some generalizations about the factors which affect the value of groups as instruments of change.

1. A group tends to be attractive to an individual and to command his loyalty to the extent that:
   a. It satisfies his needs and helps him achieve goals that are compelling to him.
   b. It provides him with a feeling of acceptance and security.
   c. Its membership is congenial to him.
   d. It is highly valued by outsiders.
2. Each person tends to feel committed to a decision or goal to the extent that he has participated in determining it.
3. A group is an effective instrument for change and growth in individuals to the extent that:
   a. Those who are to be changed and those who are to exert influence for change have a strong sense of belonging to the same group.
   b. The attraction of the group is greater than the discomfort of the change.
   c. The members of the group share the perception that change is needed.
   d. Information relating to the need for change, plans for change, and consequences of change is shared by all relevant people.
   e. The group provides an opportunity for the individual to practice changed behavior without threat or punishment.
   f. The individual is provided a means for measuring progress toward the change goals.

4. Every force tends to induce an equal and opposite counterforce. (Thus, the preferred strategy for change, other things being equal, is the weakening of forces resisting change rather than the addition of new positive forces toward change. For instance, if a group in a factory is resisting a new work procedure, it may be because they don't understand how it will work, in which case a demonstration or trial experience will be superior to exhortation or pressure.)
5. Every group is able to improve its ability to operate as a group to the extent that it consciously examines its processes and their consequences and experiments with improved processes. (In the literature this is referred to as the "feedback mechanism," a concept similar to that used in guided missiles, which correct any deviations from their course while in flight on the basis of data collected by sensitive instruments and fed back into their control mechanism.)
6. The better an individual understands the forces influencing his own behavior and that of a group, the better he will be able to contribute constructively to the group and at the same time to preserve his own integrity against subtle pressures toward conformity and alienation.
7. The strength of pressure to conform is determined by the following factors:
   a. The strength of the attraction a group has for the individual.
   b. The importance to the individual of the issue on which conformity is being requested.
   c. The degree of unanimity of the group toward requiring conformity.
8. The determinants of group effectiveness include:
   a. The extent to which a clear goal is present.
   b. The degree to which the group goal mobilizes energies of group members behind group activities.
   c. The degree to which there is agreement or conflict among members concerning means that the group should use to reach its goal.
   d. The degree to which the activities of different members are coordinated in a manner required by the group's tasks.
   e. The availability to the group of needed resources, whether they be economic, material, legal, intellectual, or other.

f. The degree to which the group is organized appropriately for its task.
g. The degree to which the processes it uses are appropriate to its task and stage of development. [Knowles and Knowles, 1972, pp. 60–64]

Another source of knowledge potentially valuable to educational practice is the emerging field of ecological psychology. Researchers in this field are studying the effects of environmental settings on human behavior and constructing a *theory of behavior settings*. The particular attributes of over- or understaffed settings have been the subject of most of their theoretical work to date. For example, in understaffed settings more people participate in more events and take more responsibility and are less evaluative of one another. Another proposition is that settings in which the participants have a heterogeneity of motives tend to be more stable than those in which there is a homogeneity of motives. [Barker, 1963, 1968, 1978; Barker and Gump, 1964; Bronfenbrenner, 1979; Ickes and Knowles, 1982; Moos, 1974, 1976, 1979; Schlossberg, 1989; Willems and Raush, 1969]

Characteristics of Effective Teachers

One of the more or less futile quests of educational researchers over the years has been the identification of the characteristics that distinguish excellent teachers from mediocre teachers. The problem is that the number of variables affecting the teaching-learning situation, (the students' background, genetic equipment, subconscious state, motivation, aspirations) the teacher (the personality, training, educational philosophy, skill) and the environment (social, cultural, physical, administrative forces), are so great, changeable, and hard to measure and control. Stephens (1967), after looking at scores of research reports on the relationship between such variables as teacher characteristics and instructional techniques on the one hand and such measures as test scores and grades on the other, concluded that practically nothing seems to make any difference in the effectiveness of instruction. Similarly, Dubin and Raveggia (1968) examined not only the conclusions but the data of nearly 100 studies

made over a forty-year period and concluded that college teaching methods make no difference in student achievement as measured by final examinations. And these are but two of a number of surveys of research that have come to similar conclusions.

The most recent survey, by N.L. Gage in 1972, paints a different picture. Gage questioned the quantitative models and the focus on teacher characteristics in previous research.

> One way to improve these models is to obtain better measures of a large number of the teacher attributes that are significant to the ability of teachers to improve learning. Such measures will come closer to estimating the full effect of teachers, independently of home and school factors. Furthermore, these measures should be aimed at process variables—'those human actions which transform the raw materials of input into opportunities for learning' [Gagne, 1970, p. 170], i.e., teacher activities, rather than teacher characteristics such as amount of education, experience, or verbal ability. [Gage, 1972, p. 34]

Gage examined research using such process measures as the Minnesota Teacher Attitude Inventory and the Flanders' interaction categories and found that "(a) teachers differ reliably from one another on a series of measuring instruments that seem to have a great deal in common. (b) These reliable individual differences among teachers are fairly consistently related to various desirable things about teachers." [*Ibid.*, p. 35]

Among his findings are the following:

> Teachers at the desirable end tend to behave approvingly, acceptantly, and supportively; they tend to speak well of their own students, students in general, and people in general. They tend to like and trust rather than fear other people of all kinds. [*Ibid.*, p. 35]
>
> Flanders and Simon (1969) concluded from their examination of a dozen studies that *"the percentage of teacher statements that make use of ideas and opinions previously expressed by pupils is directly related to average class scores on attitude scales of teacher attractiveness, liking the class, etc., as well as to average achievement scores adjusted for initial ability"* (p. 1426, italics in original). Ausubel (1963, p. 171) reviewed the experiments on learning by discovery and concluded that the furnishing of completely explicit rules is relatively

less effective than some degree of arranging for pupils to discover rules for themselves. It seems safe to say that some use of the guided discovery method, and "indirectness," in teaching is desirable. [*Ibid.*, pp. 36-27]

The third dimension of teacher behavior . . . reflects the teacher's intellectual grasp, or "cognitive organization" of what he is trying to teach. [*Ibid.*, p. 37]

Our last example of a sifting of the literature to identify a desirable kind of teacher behavior is one recently provided by Rosenshine (1970). He reviewed the evidence from a variety of sources on the degree to which the teacher's "enthusiasm" was desirable. Some of the studies reviewed were experiments in which "enthusiasm" was manipulated. In other, correlational, studies, enthusiasm as it occurred "naturally" was rated, counted, or measured with an inventory. In some of the studies, the dependent variable was measured achievement; in others, evaluative ratings of the teacher by his students or other independent observers. The varied evidence seemed remarkably consistent in supporting the desirability of teacher enthusiasm. [*Ibid.*, p. 38]

These four variables—warmth, indirectness, cognitive organization and enthusiasm—merely illustrate the kinds of contributions that research on teaching, in its present early stages, can support. [*Ibid.*, p. 38]